GPIB ⟷ RS-232 and GPIB ⟷ RS-485 Controllers

GPIB-232CT-A, GPIB-485CT-A

- NAT4882 ASIC
  - IEEE 488.2 compatible
  - Reduced software overhead
  - Increased reliability
- 256 KB RAM buffer
- 8 RS-232 or RS-485 data transfer rates up to 38.4 Kb/s; hardware handshaking, and the XON/XOFF protocols prevent data loss
- Cable lengths extend GPIB
  - Up to 15.6 m (50 ft.) for GPIB-232CT-A
  - Up to 1.2 km (4,000 ft.) for GPIB-485CT-A
- 9-pin RS-232 or RS-485 connector
- Power supply options
  - Internal AC
  - External DC
- Compatible with RS-422 ports (GPIB-485CT-A)

Driver Software

- NI-488.2
  - Windows 3.1
  - DOS

NI Application Software

- LabVIEW
- LabWindows/CVI, a component of Measurement Studio

Applications

- Integrate an RS-232/485 instrument into a GPIB system
- Control a GPIB-based test system from a remotely located central computer via RS-232/485

Overview

The National Instruments GPIB-232CT-A and GPIB-485CT-A can turn any computer or terminal with an RS-232 or RS-485 port into a full-function IEEE 488.2 controller. With the flip of a switch, the GPIB-232CT-A and GPIB-485CT-A can make any RS-232 or RS-485 device appear as a GPIB device. The small size of these controllers makes it ideal for use with laptop computers or other computers that have no internal I/O slots available.

The NAT4882 IEEE 488.2 ASIC implements the full range of GPIB controller functions, including those controller functions required and recommended by IEEE 488.2. All GPIB sequences and operations conform to IEEE 488.2. External DIP switches set the operating mode, the GPIB primary address, and serial port parameters.

Depending on the version, the GPIB-232CT-A and GPIB-485CT-A controllers can accept either AC or DC power input. You can connect both the GPIB-232CT-A and the GPIB-485CT-A to up to 14 GPIB instruments. In addition, when you pair the GPIB-485CT-A with an RS-485 board for the PC, such as the National Instruments AT-485, you can use it as a cost-effective GPIB extender up to 1.2 km (4,000 ft).

Controller Capabilities

Data Buffer

A FIFO data buffer helps maximize performance. The GPIB-232CT-A and GPIB-485CT-A can continue to accept data from the serial or GPIB port while the other port is busy.

Complete Status Update

The GPIB-232CT-A and GPIB-485CT-A handle both continuous and requested status and error reporting in either symbolic or numeric form. Symbolic status reporting is useful for direct viewing on a terminal (CMPL for complete, ERR for error, and so on). Numeric status reporting is useful for processing by an application.

INFO CODES
For more information or to order products online, visit *ni.com/info* and enter:

gpib232cta
gpib485cta

BUY ONLINE!

Modes of Operation

You can use both controllers in either Serial (S) or GPIB (G) mode. These modes are described using the GPIB-232CT-A as an example.

S Mode

Figure 1 shows the GPIB-232CT-A used in the S mode. In S mode, the device on the serial side of the GPIB-232CT-A is a computer or similar intelligent device.

The GPIB-232CT-A acts as a protocol translator between the serial port and GPIB devices, and has complete Talker/Listener/Controller capability. For S mode, you can use a full repertoire of GPIB-related commands and others that manage the serial interface and the GPIB-232CT-A itself.

G Mode

Figure 2 shows the GPIB-232CT-A used in the G mode. In G mode, the GPIB-232CT-A makes a serial device appear as a GPIB Talker/Listener to the Controller. The GPIB-232CT-A recognizes two addresses in G mode – it treats one as its GPIB address and the other as the serial device address. When the GPIB-232CT-A receives its GPIB listen address, it treats the data it receives as a programming message. When the GPIB-232CT-A

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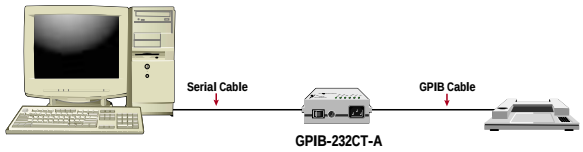

Figure 1. S Mode Application Example

receives the serial device listen address, it simply passes the data it receives to the serial device. When the GPIB-232CT-A receives its GPIB talk address, it sends out status information. When the GPIB-232CT-A receives the serial device talk address, it sends out the serial data received from the device. You can program the GPIB-232CT-A to assert SRQ under a variety of conditions; for example, when it has received any data from the serial device, or when it has received an end-of-string byte from the serial device.

Software – Win32 Compatibility

Native 32-bit compatability with board-level NI-488.2 functions is possible with a Win 32 operating system. For details, refer to the Application Note titled "Board-Level NI-488.2 Software for the GPIB-232CT-A and Windows NT/98/95" (Application Note 130, part number 341585A-01).

Under Windows Me/9x, you can install and use NI-488.2 for DOS to run DOS applications, NI-488.2 for Windows 3.1 to run Win16 applications, and NI-488.2 for Windows 3.1 along with the compatibility release to run Win32 applications.

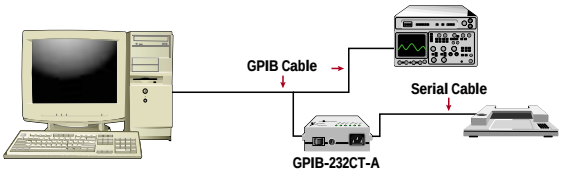

Figure 2. G Mode Application Example

Ordering Information

GPIB-232CT-A
GPIB-232CT-A Hardware Only
- AC version 776668-0P
- DC version 776899-Y1

GPIB-232CT-A and NI-488.2 for Windows 3.1/DOS
- AC version 776667-0P
- DC version 776900-Y1

GPIB-485CT-A
GPIB-485CT-A Hardware Only
- AC version 777146-0P
- DC version 777147-Y1

GPIB-485CT-A and NI-488.2 for Windows 3.1/DOS
- AC version 777148-0P
- DC version 777149-Y1

P = Power cord type
- 1 = U.S. 120 VAC
- 2 = Swiss 220 VAC
- 3 = Australian 240 VAC
- 4 = Universal Euro 240 VAC
- 5 = North American 240 VAC
- 6 = United Kingdom 240 VAC

Y = Power supply type
- 0 = 115 VAC
- 3 = 230 VAC

For cables, see page 658.

Specifications

Serial Port
Full-duplex with optional echo
Uses TxD, RxD, RTS, CTS, and DTR
7 or 8 data bits, 1 or 2 stop bits
Odd, even, or no parity
Baud rates: 300, 600, 1200, 2400, 4800, 9600 b/s
- 19.2 kb/s; 38.4

RS-232 specific
- Asynchronous RS-232 EIA level
- DTE configuration
- XON/XOFF and DTR/RTS/CTS handshake

RS-485 specific
- Asynchronous EIA-485 level
- Hardware handshake and XON/XOFF

Power Requirements
AC version (50 to 60 Hz)
- 100 to 120 ±10% VAC ..... 5 VA
- 220 to 240 ±10% VAC ..... 5 VA

DC version (50 to 60 Hz)
- 5 to 13 VDC ..... 700 mA

Physical
Dimensions
AC version ..... 7.6 by 2.8 by 11.8 cm (3.0 by 1.1 by 4.7 in.)

I/O connectors
GPIB port ..... IEEE 499 standard 24 pin
Serial port ..... 9 pin male D-Sub

Operating Environment
Temperature ..... 10 to 40° C